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Beliefs, perceptions, knowledge and psychological impact of acne vulgaris among youths in Alqunfudhah District, Kingdom of Saudi Arabia: A cross sectional study

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ABSTRACT

Introduction: Acne vulgaris is one of the most prevalent skin conditions, especially in adolescents, youths and young adults. Acne has negative effects on the body, society and the mind. This study aimed to measure beliefs, perceptions and knowledge determine the psychological symptoms associated with acne vulgarity among youths in Alqunfudhah District, kingdom of Saudi Arabia. **Methods:** A cross sectional study was conducted on a sample of 1092 in Alqunfudhah district, KSA in the time from May to July 2022. It was selected by a simple random sampling technique. Data were collected using a predesigned self-administrated questionnaire. **Results:** Based on the results, 64.9% of the participants (709) were suffering from acne. Around three quarters of the participants' age ranged from 20-25 years, 80.4% were females. Nutrition was the commonest factor believed to cause acne. The most common treatment used for acne was ointment from the pharmacist, 44.6% reported their worry about acne and dark spots made them anxious about acne. **Conclusion:** Acne vulgaris is more prevalent among female youths. Only one third of the participants had a good knowledge level about it.

Keywords: Acne vulgaris, adolescents, beliefs, knowledge, perceptions, youths

1. INTRODUCTION

Acne vulgaris is one of the most common skin disorders, especially among adolescents, youths and young adults (Lynn et al., 2016). Occurrence of acne is associated with excess sebum secretion from the sebaceous glands on the skin

(Ghodsi et al., 2009). Comedones, papules, pustules, cysts, nodules and scars appear on the skin's surface when the oil that lubricates it gets stuck in blocked oil ducts (Ali et al., 2010). The serious disease of acne has negative effects on the body, society and the mind. The condition's negative effects can be severe and significantly detrimental to one's quality of life (QOL) (Yahya et al., 2009). Additionally, it can lead to depression, anxiety and low self confidence as well as reduced social interaction, particularly if the acne leaves scars or pigmentation, which will significantly lower QOL (Alqahtani et al., 2021). The four main factors in the pathogenesis of acne are hyper keratinization, increased sebum production, *Propionibacterium acnes* (*P. acnes*) colonisation and inflammation (Gao et al., 2009). Acne can develop and worsen due to a variety of reasons, including hormonal, environmental, immunological and genetic variables (Gao et al., 2019). Recent data refer to a connection between several dietary elements and acne. Foods with a high glycemic index and dairy products have been found to be related (Bertolani et al., 2022). According to a French study on teenage acne, found that frequent washing could be beneficial. Excess intake of chocolate and junk foods, smoking, sweating, bad hygiene, touching or squeezing areas, consuming fatty foods, using makeup, exposure to pollution and menstruation were all thought to cause acne. Although 69.3 percent of respondents thought acne should be addressed, the majority 80.8 percent recorded it was just a normal part of adolescence (Poli et al., 2011). Another study conducted in Turkey revealed that despite the significant prevalence of acne, there is an urgent need for public education regarding its a etiology and path physiology, potential repercussions and the importance of effective treatment due to ignorance and false beliefs (Uslu et al., 2008).

During the 20th century, the bulk of epidemiological research on acne was carried out in the United States and the United Kingdom, with a community based study which involved more than 20,000 Americans. In the United States, between the ages of one and 74 years, 312.4% of the population or 60.6 million people have one or more significant skin problems (Vilar et al., 2015). Despite of high prevalence of acne worldwide, there are many differences in acne occurrence in Saudi Arabia. For instance, in a study conducted in central Saudi Arabia, Al-Robaee revealed a 56.2 percent prevalence of skin rashes among students at Qassim University with negligible differences between men and women (Al Robaee et al., 2005). Prevalence of acne vulgaris among young and adolescent females in Riyadh was 68.2 percent (Abo El-Fetoh et al., 2016). The overall prevalence of self revealed skin breakouts among intermediate and auxiliary school students in Jazan was 65.1%, with girls being more affected than boys (71 percent and 60 percent respectively) (Bajawi et al., 2016). In Makkah, 56.6 percent of female patients (14–38 years old) visiting dermatological short term centers of three emergency clinics had acne vulgaris (Bahattab et al., 2017). Although many studies have been done worldwide about acne, but in Alqunfudhah district, there are no studies have been done about it yet. Therefore, we were interested to measure patients' beliefs, perceptions and determining the psychological symptoms associated with acne patients, as well as to emphasize the need of monitoring and controlling psychological symptoms during acne treatment.

2. MATERIALS AND METHODS

Study design

A cross sectional community based study was conducted in Alqunfudhah district, Saudi Arabia between May and July 2022. The study subjects were residents of Alqunfudhah district. Both males and females of 15 -25 years either Saudi or other nationalities were included.

Study setting

Al-Qunfudhah district is located on the Red Sea coast. Its population represented the fourth largest number in Makkah Province. It occupies about 3.7% of the regional area.

Sample Size

In this study, the sample size was calculated by using EPI-info 7 based on the size of the total population in Alqunfudhah district 195000. At CI (95%) and a 5% margin of error, a minimum sample of 383 was needed.

Data Collection

An electronic predesigned questionnaire was used and compiled in Arabic and structured with slight modifications from questions used in previous publications (Pearl et al., 1998; Davidovici & Wolf et al., 2010). The first section focused on demographic data which included; age, sex, education and employment information. The second section included items to assess the participants' beliefs and perceptions about acne. And the third section included items to assess the psychological symptoms associated with acne and its impact on their QOL of acne patients. The knowledge about acne was reported as poor if the participant replied correctly to

<50% of knowledge questions, fair if 50%-75% and good if > 75%. The psychological impact of acne on acne patients was also rated as low, fair and high influence with giving the highest score to the little psychological effect.

Procedure of data collection

The electronic survey was sent through different social network applications as what's App and Telegram to feasibly approach public and for easy survey completion by the subjects participating. Data collections were collected in about three months from May to July 2022. Then the participants' responses were checked by the study researchers. Any incomplete or invalid responses were discarded from the study results (there were about 60 incomplete or invalid responses, all were excluded from the main study results).

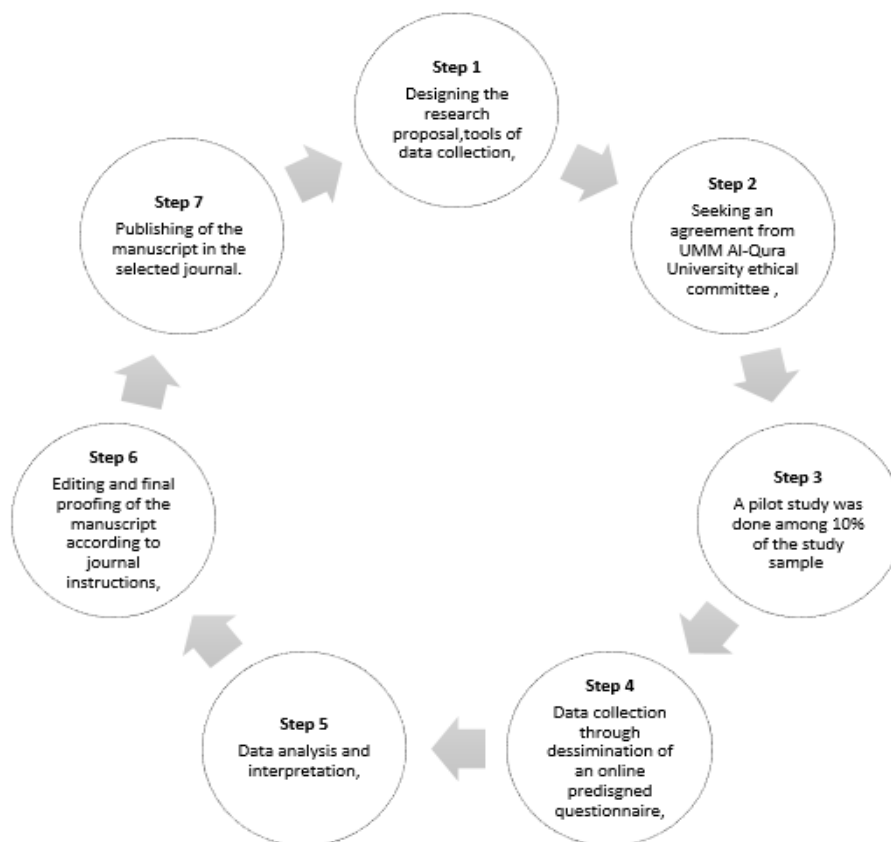


Figure 1 Consort chart of the study methodology

A pilot study was done among 10% of the study sample (50 participants) who were particular from the same study location for estimating the clarity and applicability of the study tools and recognizes the obstacles that may face data collection and possible actions to overcome. The predesigned questionnaire was tested for stability of its questions and scores. Internal consistency was evaluated in order to recognize the extent to which its items would be able to measure the intended objectives. Moreover assessment of the degree to which their items are connected to each other. Internal steadiness assessed reliability by Cranach's Alpha coefficient test was (0.79).

Data analysis

The collected data were analyzed statistically through using (SPSS) version 26 (Armonk, NY: IBM Corp.). Qualitative data were expressed in the form of numbers and percentages and the Chi squared test (χ^2) was applied to test the relationship between variables.

3. RESULTS

The total number of included participants is 1092. Table 1 represents the demographic characteristics of participants, 73.1% of the participants had ages that ranged from 20-25 years, 80.4% were females and 64.5% had a university level of education or above. Of

them, 20.1% were employed and 37.3% had monthly income of more than 10000 SR., 40% and 38.1% had a father and a mother with a university education or/and above respectively.

Table 1 Demographic data of the studied group (N=1092)

Variable	N (%)
Age	
15-16 years old	98 (9)
17-19 years old	196 (17.9)
20-25 years old	798 (73.1)
Gender	
Female	878 (80.4)
Male	214 (19.6)
Educational level	
Illiterate	4 (0.4)
Primary school	9 (0.8)
Intermediate school	76 (7)
High school	297 (27.2)
Diploma	2 (0.2)
University and above	704 (64.5)
Employment	
Employed	220 (20.1)
Unemployed	219 (20.1)
Student	653 (59.8)
Monthly income of the family in riyals	
Less than 5000	299 (27.4)
5000-10000	386 (35.3)
More than 10000	407 (37.3)
The educational level of the father	
Uneducated	119 (10.9)
Primary education.	141 (12.9)
Intermediate school.	155 (14.2)
High school.	240 (22)
University and above	437 (40)
The educational level of the mother	
Uneducated	250 (22.9)
Primary education.	180 (16.5)
Intermediate school.	100 (9.5)
High school.	146 (13.4)
University and above	416 (38.1)

Table 2 shows that the most common causes of acne according to the participants' opinions were nutrition (82.6%), hormones (79.9%), puberty (70.1%) and stress (64.8%). The most common factors for the increase in acne were stress (79.9%), psychological state (74.9%), chocolates (70.1%), heat and humidity (64.7%) and cosmetic products (60%). The most common alleviating factors for acne were wash the face (88.3%), medicines (68.4%) and psychological state (29.3%). Less than half of the participants (45.8%) feel having enough information about acne. As for the participants' beliefs, 20.1% thought that acne appears in adolescence and is a skin disease that requires going to the doctor. While 17.9% thought that acne appears in adolescence, is temporary condition that disappears on its own and is a skin disease that requires going to the doctor.

Table 2 Beliefs and perceptions of the studied participants about acne vulgaris (N=1092)

Variable	N (%)
Causes of acne vulgaris	
Nutrition	902 (82.6)
Stress	708 (64.8)
Hormones	873 (79.9)
Seasonally	247 (22.6)
Puberty	765 (70.1)
Genetic causes	301 (27.6)
Bacterial infection	354 (32.4)
Physical contact	192 (17.6)
Not cleaning the face	380 (34.8)
Factors that increase occurrence of acne vulgaris	
Psychological state	818 (74.9)
Stress	872 (79.9)
Squeezing/picking/rubbing	547 (50.1)
Environmental/air pollution	547 (50.1)
Chocolates	765 (70.1)
Eating oily food	545 (49.9)
Cosmetic products	655 (60)
Medicines	55 (5)
Heat and humidity	707 (64.7)
Alleviating factors for acne vulgaris	
Wash the face	964 (88.3)
Medicine	747 (68.4)
Psychological state	320 (29.3)
Stress	90 (8.2)
Cosmetics products.	76 (7)
Environmental/air pollution	39 (3.6)
Heat and humidity	64 (5.9)
Chocolates	50 (4.6)
Squeezing/picking/rubbing	64 (5.9)
Enough information about acne vulgaris	
No	592 (54.2)
Yes	500 (45.8)
Beliefs about acne vulgaris	
Skin disease that requires going to the doctor	54 (4.9)
Temporary condition that disappears on its own	54 (4.9)
Skin disease that requires going to the doctor	54 (4.9)
Untreatable disease / Appears in adolescence / Contagious disease	44 (4)
Skin disease that does not require going to the doctor / Appears in adolescence / Temporary condition that disappears on its own	88 (8.1)
Untreatable disease	44 (4)

Appears in adolescence	186 (17)
Appears in adolescence / Skin disease that requires going to doctor	220 (20.1)
Appears in adolescence / Temporary condition that disappears on its own	196 (17.9)
Appears in adolescence / Temporary condition that disappears on its own / Skin disease that requires going to the doctor	98 (9)

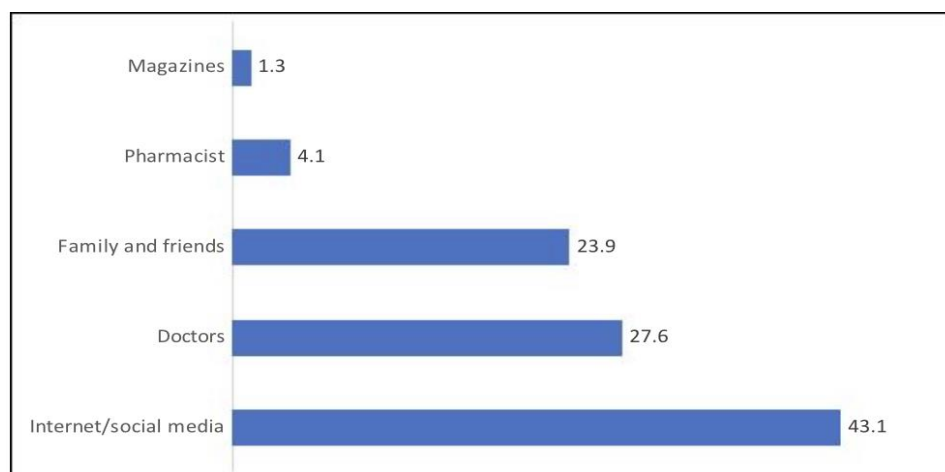


Figure 2 Source of information about acne among participants.

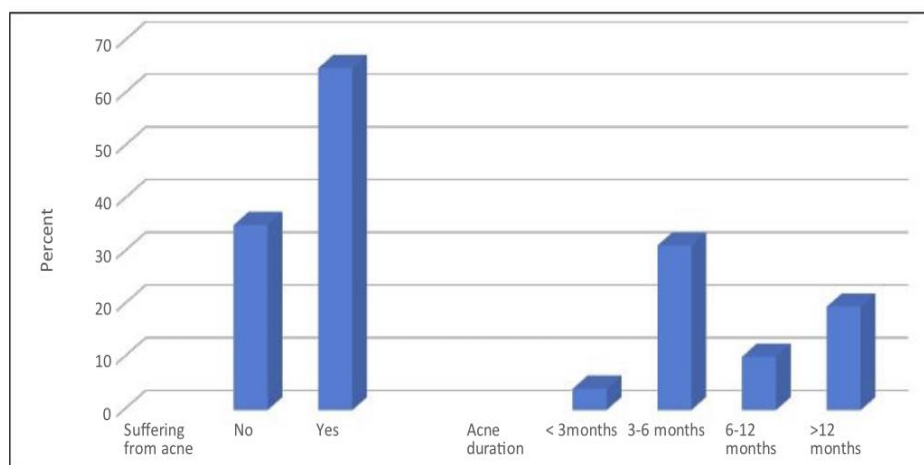


Figure 3 Prevalence and duration of acne vulgaris among the participants.

Table 3 shows that for participants who had acne (n=709), 48% had acne for 3-6 months. The most common treatment methods used for acne were ointment from the pharmacist, (53.5%), lifestyle change to a healthy one (55.5%) and detergents/toners (47.4%). The most common products they benefited from were the ointment from the pharmacist (37%) and the detergents/Toners (36.8). While 50.3% reported that there was no product they never benefited from. Of them, 31.2% and 27.7% reported that the most common sources of hearing about these products for acne were the internet and the doctor respectively.

Table 3 Prevalence, duration and treatment methods of acne vulgaris among the participants

Variable	N (%)
For participants who have acne vulgaris (N = 709)	
Duration since having acne vulgaris (n=709)	
<3months	44 (6.2)
3-6 months	341 (48)
6-12 months	110 (15.5)
>12 months	214 (30.3)
Methods of acne treatment	
Vitamin A derivatives	119 (16.7)
Detergents/Toners	407 (47.4)
Lifestyle change to a healthy one	394 (55.5)
Ointment from the pharmacist	380 (53.5)
Prescription drugs	229 (32.2)
Antibiotics	65 (9.1)
Herbal medicine	142 (20)
Cosmetic products	32 (4.5)
The most products benefited from	
Herbal medicine	55 (7.7)
Prescription drugs	55 (7.7)
None	44 (6.2)
Ointment from the pharmacist	271 (37)
Detergents/Toners	261 (36.8)
Vitamin A derivatives	33 (4.6)
The least products benefited from	
Antibiotics	22 (7.7)
Cosmetic products	33 (4.6)
Herbal medicine	22 (3.1)
Prescription drugs	11 (1.5)
None	357 (50.3)
Ointment from the pharmacist	33 (4.6)
Detergents/Toners	175 (18.9)
Vitamin A derivatives	66 (9.3)
Source of information about the treatment options	
The internet	229 (31.2)
Family and friends	141 (19.8)
The TV	11 (1.5)
The pharmacist	130 (18.3)
The doctor	197 (27.7)
Magazines and newspapers	11 (1.5)

The psychological impact of acne on patients is illustrated in (Table 4). Of acne patients, 29.5% reported that they sometimes worry about acne, while 21.8% reported that they are unhappy/very sad. The most common factors that made them more unhappy, sad or anxious about acne were scars (33.5%) and painful big pills (31.6%). About 27% (27.6%) and 46.6% reported that they are afraid to face others and they feel their physical appearance has a negative impact on them respectively. Of them, 3.3%, 10.4% and 33.9% reported that acne had a severe, average and a little impact on their self confidence respectively. While 3.2%, 2.2% and 18.6% reported that acne vulgaris possessed severe, average and a little impact on their relationship with friends respectively. Of them only 3.6% and 11.2% reported that acne had an average and a little impact on their relationship with their families respectively.

While acne had a severe, average and a little impact on outside activities for 6.9%, 3.5% and 16.2% of acne patients. Most of them (81.4%) and 6.9% admitted that acne had an average and a little impact on their school/university performance.

Table 4 Distribution of acne patients according to psychological impact of acne (N = 709)

Variable	N (%)
Feeling about acne vulgaris	
Unhappy/very sad	155 (21.8)
Frequently Worried	105 (14.8)
Sometimes worry	363 (29.5)
I'm not worried at all	86 (12.1)
Causes for being more unhappy, sad or anxious about acne	
Dark spots	107 (15)
Scars	238 (33.5)
Painful little pills	91 (12.8)
Painful big pills	222 (31.6)
None of the above	51 (7.1)
Fear from facing others	
No	514 (72.4)
Yes	195 (27.6)
Feeling that individual physical appearance has a negative impact on him/her	
No	379 (53.4)
Yes	330 (46.6)
Acne impact on individual self-confidence	
Severe	24 (3.3)
A little	241 (33.9)
None	370 (52.4)
Average	74 (10.4)
Acne impact on individual relationship with his/her friends	
Severe	23 (3.2)
A little	132 (18.6)
None	538 (76)
Average	16 (2.2)
Acne impact on individual relationship with his/her family	
A little	80 (11.2)
None	603 (85.2)
Average	26 (3.6)
Acne impact on individual outside activities	
Severe	49 (6.9)
A little	115 (16.2)
None	520 (73.4)
Average	25 (3.5)
Acne impact on individual performance at school/university	
A little	49 (6.9)
None	83 (11.7)
Average	577 (81.4)

Table 5 shows that acne patients who had a good knowledge level about acne had a significant little psychological effect ($p < 0.05$). And for the whole sample ($N = 1092$), a good knowledge level about acne was significantly higher among those who had a university level of education and above ($p < 0.05$).

Table 5 Relationship between participants' knowledge regarding acne and its prevalence, psychological effect on patients and participants' demographics ($N = 1092$)

Variable	Knowledge level			χ^2	p-value
	Poor	Fair	Good		
Acne prevalence (n=709)				5.72	0.057
No	148 (33)	217 (35.6)	18 (52.9)		
Yes	301 (67)	392 (64.4)	16 (47.1)		
Psychological effect (n=709)				13.55	0.009*
Severe	8 (2.7)	12 (3.1)	3 (18.8)		
Moderate	21 (7)	29 (7.4)	0 (0.0)		
Little	272 (90.4)	351 (89.5)	13 (81.3)		
Age				11.01	0.088
15-16 years old	42 (9.4)	54 (8.9)	2 (5.9)		
17-19 years old	73 (16.3)	116 (19)	7 (20.6)		
20-25 years old	334 (74.6)	439 (72.1)	21 (71.5)		
Gender				0.67	0.714
Female	356 (79.3)	495 (81.3)	27 (79.4)		
Male	93 (20.7)	114 (18.7)	7 (20.6)		
Educational level				24.04	0.02*
Illiterate	2 (0.4)	2 (0.3)	0 (0.0)		
Primary school	6 (1.3)	3 (0.5)	0 (0.0)		
Intermediate school	33 (7.3)	41 (6.7)	2 (5.9)		
High school	124 (27.6)	155 (25.5)	8 (23.5)		
Diploma	1 (0.2)	0 (0.0)	1 (2.9)		
University and above	282 (62.8)	400 (65.7)	22 (64.7)		
Employment				3.27	0.514
Employed	101 (22.5)	114 (18.7)	5 (14.7)		
Unemployed	84 (18.7)	128 (21)	7 (20.6)		
Student	264 (58.8)	367 (60.3)	22 (64.7)		
Monthly income of the family in riyals				4.68	0.321
Less than 5000	116 (25.8)	174 (28.6)	9 (26.5)		
5000-10000	149 (33.2)	225 (36.9)	12 (35.3)		
More than 10000	184 (41)	210 (34.5)	13 (38.2)		

*Association found at 0.05 level of significant

4. DISCUSSION

In this cross sectional study, the researchers aimed to examine the youths' (15-25 years) beliefs, perceptions and knowledge about acne vulgaris. In addition, to determine their psychological impact in Al-Qunfudhah city in kingdom of Saudi Arabia using a pre designed questionnaire. Around 65% of youths seemed to suffer from acne, of which 80% of them were females. The increased rate of acne in females was reported in previous studies (Bahalah et al., 2017). As for the participants' beliefs in this study, 20.1% thought that acne appears in adolescence and is a skin disease that requires doctor's consultation. While 17.9% thought that acne appears in adolescence, is temporary condition that disappears on its own and is a skin disease that requires a visit to the doctor. It was in contrast to another study which showed that 63.4% of the students addressed acne as being incurable skin disease (Deyab et al., 2020). This great difference between both studies may be related to the difference in both studies' times as the availability of

information to public is changed and become more easy today's through different types of social media. In another study, a large proportion of female patients believed that acne is a health and cosmetic problem (Bahalah et al., 2017). This is not unusual results where females are more careful about their appearance especially their faces which reflects their beauty.

Regarding participant's perceptions in this study, more than 60% of participants thought that the most common causes of acne are nutrition, hormones, puberty and stress. In addition, more than 60% of participants believed that the most common factors for the increase in acne are stress, psychological state, chocolates, heat/humidity and cosmetic products. On the other hand, more than 60% of participants perceived that the most common alleviating factors for acne are; face hygiene and medicines. Wrong perception of acne was found in previous two studies done in different areas in Saudi Arabia. In the first study in Jazan, adolescent school participants had wrong perceptions (Bajawi et al., 2016) and in the second study in Jeddah, about half of the acne patients from clinic had wrong perceptions (Mashat et al., 2013). By time; there is a lot of development in the means of communication and availability of different types of information including health related information therefore it was expected that the current study participants have some degree of knowledge about acne to level higher than previous years studies.

Regarding youths' knowledge of acne in this study, 55.8% of the participants had fair level of knowledge. While only 33.1% had a good knowledge level. The participants had more knowledge compared to previous studies done in Saudi Arabia. Previous studies found that their participants had poor or defect in knowledge (Deyab et al., 2020; Mashat et al., 2013). In contrast to another study that found good knowledge of acne community participants, but most of them were aged between 46 and 69 years (Al Saud et al., 2017). The difference in both studies' participants' ages may be the real cause of this great discrepancy between both results as (Al Saud et al., 2017) studies knowledge among adults who could have more stock of information than youths or young adults. Regarding psychological impact of acne in the current study, more than 80% of youths suffering from acne had little psychological impact, which is different than another study which found that 72% of their medical students suffered from psychological impact (Zahr A et al., 2017). However that study was done on medical students only (Zahr A et al., 2017). The cause of this great difference between both results may be due to the higher level of medical knowledge among medical students during their medical study about the nature of acne vulgaris and its risk to leave scares in faces.

5. CONCLUSION

In conclusion, it has been shown that there was a poor level of knowledge about acne vulgaris among youths. Acne vulgaris was more frequent among female than male youths. The psychological impact of the disease is mostly characterized by a dread of interacting with other people and a detrimental influence that the student's physical appearance has on their mental health. Because only thirty percentage of the study's sample acquired their knowledge about acne from medical professionals, the study researchers think there should be more programs based in the community that inform and educate individuals suffering from acne. Moreover, a more unified validated tool for knowledge, perception, belief, attitude and psychological impact should be developed. Qualitative studies involving focus group discussion and in depth interview are recommended to get more in depth information about the negative psychological impact of acne vulgaris.

Strengths

A key strength of this study lies within the fact that firstly this study investigated several outcomes related to acne vulgaris among youths such as, beliefs, perceptions, knowledge and their psychological impact. Secondly, random sample was used as the sampling technique to decrease selection bias.

Limitations

This work suffers from some limitations notably related to the heterogeneity in knowledge, belief, perception and psychological impact items and population studied which made comparing the results between studies very difficult. It was conducted in one city and most of the participants included were females and aged between 20-25 years. This may not be representative of all Saudis, making generalizing the results of the study difficult. This research did not take in its consideration the effects and relation of acne with marital status of the participants however many of them were married.

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Authors' contributions

SHA: Conceptualized, designed the study, reviewed, finally proofed and submitted it on the journal web site.

SOA: Designed the study survey, materials, collected and organized data and edited article.

ZHA: Designed the study survey, data acquisition, edited the manuscript.

AAS, RSA, HEA, & WAA: Data acquisition, edited the manuscript.

Informed consent

Written informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

Ethical approval

An ethical approval was provided by Medical Research and Ethical Committee of the college of medicine in Makkah with IRB of UQU reference RNNW220322. The confidentiality of electronically collected data was maintained all the time.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data materials availability

Data that support the findings of this research are embedded within the manuscript

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